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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):   Diane R. Meirowitz

Assignee: Sun Microsystems, Inc.

Title: FACTORED ASSERT CHAINS

Serial No.:   10/625,334   Filing Date: July 22, 2003

Patent No.:   7,272,829   Issued: September 18, 2007

Examiner: Isaac Tuku Tecklu   Group Art Unit: 2192

Docket No.:   P-9240

Monterey, CA
November 9, 2007

ATTENTION: CERTIFICATE OF CORRECTIONS BRANCH
COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

REQUEST FOR ENTRY OF
CERTIFICATE OF CORRECTION

Sir:

Please enter the enclosed Certificate of Correction (PTO form 1050) in the above Patent.

The errors sought to be corrected were made by

[X]   The Patent and Trademark Office (PTO) as explained below. Thus, no fee is required for the Certificate of Correction pursuant to 37 CFR §1.322.

[ ]   Applicant(s) (at least in part). See next section for explanation. The appropriate fee under 37 C.F.R. §1.323 is enclosed.

Attached as Exhibit A (6 pages) is a copy of the relevant pages of the proposed and adopted claim amendments mailed with the Notice of Allowance of May 17, 2007. This Exhibit supports the requested corrections to Claims 5, 11, 22, and 33, and

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shows that the errors were made by the U.S. Patent and Trademark Office.

As shown highlighted in Exhibit A, on pages 3 and 4 of the proposed and adopted claim amendments attached to the Notice of Allowance, originally numbered Claim 6 (renumbered in the Patent as Claim 5) reads:

> A method for generating factored assert chains for a program in a compiler, the method comprising:
>
> generating one or more assert statements in a basic block of the program, wherein an assert statement is a statement identifying known information regarding a variable at a specific point in said program;
>
> creating a dominator tree for said basic block;
>
> creating an initialized map of assert statements for each variable in said basic block; and
>
> calling an assert chain search procedure with entry as a parameter, wherein entry is a root node of said dominator tree, and further wherein said assert chain search procedure has an input parameter X, the assert chain search procedure comprising:
>
> for each statement S in X:
>
> finding each variable use in the statement S;
>
> for each variable use in the statement S:
>
> determining if there is an available assert statement which defines information about the corresponding variable for the variable use; making an assert chain from the variable use to the available assert statement if there is an available assert statement which defines information about the corresponding variable for the variable use; and
>
> iteratively calling the method using each child of X in the dominator tree as a parameter.

Specifically, in the Patent at Column 8, Claim 5, erroneous text present at lines 35 through 47, should be deleted.

Also, as shown highlighted in Exhibit A, on page 5 of the proposed and adopted claim amendments attached to the Notice of Allowance, originally numbered Claim 14 (renumbered in the Patent as Claim 11) reads "…a statement traverser…". The same

line in the Patent at Column 9, Line 40 reads "…statement traverser…". Specifically, the term "a" prior to "statement" has been omitted and should be added.

Also, as shown highlighted in Exhibit A, on page 9 of the proposed and adopted claim amendments attached to the Notice of Allowance, originally numbered Claim 25 (renumbered in the Patent as Claim 22) reads "…A computer-based apparatus for generating factored…". The same line in the Patent at Column 11, Line 9 reads "…A computer-based apparatus for, generating…". Specifically, the comma present after "for" and prior to "generating" should be deleted.

Also, as shown highlighted in Exhibit A, on page 14 of the proposed and adopted claim amendments attached to the Notice of Allowance, originally numbered Claim 39 (renumbered in the Patent as Claim 33) reads "…for each variable use in the statement S:…". The same line in the Patent at Column 14, Line 5 reads "…for each variable use in the statement S;…". Specifically, the semicolon present after "S" should be replaced with a colon.

Although it is believed that no fee is required, the Commissioner is hereby authorized to charge any additional fees required for consideration of the enclosed documents, and to credit any overpayment of fees to Deposit Account No. 50-0553.

Please direct all inquiries concerning this request to the undersigned attorney.

Respectfully submitted,

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2.   (Original) The method of claim 1, further comprising saving a current value in a map of assert statements for each variable.

3.   (Original) The method of claim 1, further comprising:
determining if the statement is an assert statement after said making;
adding a mapping from each variable use in the statement to an assert statement if the statement is an assert statement; and
deleting a mapping of any reference to an assert statement for each definition in the statement if the statement is not an assert statement.

4.   (Original) The method of claim 1, further comprising restoring a current value of a map of assert statements for each variable after said iteratively calling.

5.   (Cancelled)

6.   (Currently amended) A method for generating factored assert chains for a program in a compiler, the method comprising:
generating one or more assert statements in a basic block of the program, wherein an assert statement is a statement identifying known information regarding a variable at a specific point in said program;
creating a dominator tree for said basic block;
creating an initialized map of assert statements for each variable in said basic block; and
calling an assert chain search procedure with entry as a parameter, wherein entry is a root node of said dominator tree, and further wherein said assert chain search procedure

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has an input parameter _X_, the assert chain search procedure
comprising:

    for each statement _S_ in _X_:

        finding each variable use in the statement _S_;

        for each variable use in the statement _S_:

            determining if there is an available assert
statement which defines information about the
corresponding variable for the variable use;

            making an assert chain from the variable use
to the available assert statement if there is an
available assert statement which defines
information about the corresponding variable for
the variable use; and

    iteratively calling the method using each child of _X_
in the dominator tree as a parameter.

    7.   (Original) The method of claim 6, wherein said
generating includes:

    finding an if...then...else statement in said basic
block, said if...then...else statement having a condition, a
then portion, and an else portion;

    inserting an assert statement indicating that said
condition is true in said then portion; and

    inserting an assert statement indicating that said
condition is false in said else portion.

    8.   (Original) The method of claim 6, wherein said
generating includes:

    finding a do loop, said do loop having a non-constant
stride; and

    inserting an assert statement indicating that said
stride is not equal to zero.

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9.   (Cancelled)

10.   (Currently amended)   The method of claim 96, wherein
said assert chain search procedure further comprises saving a
current value in a map of assert statements for each variable.

11.   (Currently amended)   The method of claim 96, wherein
said assert chain search procedure further comprises:
        determining if the statement S is an assert statement
after said making;
        adding a mapping from each variable use in the
statement S to an assert statement if the statement S is an
assert statement; and
        deleting a mapping of any reference to an assert
statement for each definition in the statement S if the
statement S is not an assert statement.

12.   (Currently amended)   The method of claim 96, wherein
said assert chain search procedure further comprises restoring a
current value of a map of assert statements for each variable
after said iteratively calling.

13.   (Cancelled)

14.   (Previously amended)   An apparatus for generating
factored assert chains for a program from assert statements,
wherein an assert statement is a statement identifying known
information regarding a variable at a specific point in said
program, the apparatus comprising:
        a memory having stored therein at least a portion of an
application for generating factored assert chains for a program
from assert statements, said application comprising:
        a statement traverser;

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23. (Original) The apparatus of claim 21, wherein said
assert chain search procedure caller further comprises:
        an assert statement determiner coupled to said
statement traverser and to said assert chain creator;
        a variable use mapping adder coupled to said assert
statement determiner; and
        an assert statement reference mapping deleter coupled
to said assert statement determiner.

24. (Original) The apparatus of claim 21, wherein said
assert chain search procedure caller further comprises a current
variable value map of assert statements restorer coupled to said
statement traverser.

25. (Previously amended) A computer-based apparatus for
generating factored assert chains from assert statements in a
program using a compiler, the program having a dominator tree,
wherein the method has an input parameter X initially assigned
an entry node of said dominator tree, the apparatus comprising:
        for each statement S in X:
                means for finding each variable use in the
        statement S;
                for each variable use in the statement S:
                        means for determining if there is an
                available assert statement which defines
                information about the corresponding variable for
                the variable use, wherein an assert statement is
                a statement identifying known information
                regarding a variable at a specific point in said
                program;
                        means for making an assert chain from the

36.   (Currently amended)   The apparatus of claim 3230, wherein said assert chain search procedure further comprises means for restoring a current value of a map of assert statements for each variable after said iteratively calling.

37.   (Cancelled)

38.   (Previously amended)   A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for generating factored assert chains from assert statements in a program using a compiler, the program having a dominator tree, wherein the method has an input parameter X initially assigned an entry node of said dominator tree, the method comprising:

    for each statement S in X:

        finding each variable use in the statement S;

        for each variable use in the statement S:

            determining if there is an available assert statement which defines information about the corresponding variable for the variable use, wherein an assert statement is a statement identifying known information regarding a variable at a specific point in said program;

            making an assert chain from the variable use to the available assert statement if there is an available assert statement which defines information about the corresponding variable for the variable use; and

    iteratively calling the method using each child of X in the dominator tree as a parameter.

39.   (Currently amended)   A program storage device readable by a machine, tangibly embodying a program of

instructions executable by the machine to perform a method for generating factored assert chains for a program in a compiler, the method comprising:

generating one or more assert statements in a basic block of the program, wherein an assert statement is a statement identifying known information regarding a variable at a specific point in said program;

creating a dominator tree for said basic block;

creating an initialized map of assert statements for each variable in said basic block; and

calling an assert chain search procedure with entry as a parameter, wherein entry is a root node of said dominator tree, and further wherein said assert chain search procedure has an input parameter X, the assert chain search procedure comprising:

for each statement S in X:

finding each variable use in the statement S;

for each variable use in the statement S:

determining if there is an available assert statement which defines information about the corresponding variable for the variable use;

making an assert chain from the variable use to the available assert statement if there is an available assert statement which defines information about the corresponding variable for the variable use; and

iteratively calling the method using each child of X in the dominator tree as a parameter.

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PATENT NO. : 7,272,829 B1

APPLICATION NO.: 10/625,334

ISSUE DATE : September 18, 2007

INVENTOR(S) : Diane R. Meirowiz

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In Column 8, Claim 5, Line 35, delete "calling an assert chain search procedure with entry as a parameter, wherein entry is a root node of said dominator tree, and further wherein said assert chain search procedure instructions executable by the machine to perform a method for generating factored assert chains for a program in a compiler, the method comprising: generating one or more assert statements in a basic block of the program wherein an assert statement is a statement identifying known information regarding a variable at a specific point in said program;creating a dominator tree for said basic block;creating an initialized map of assert statements for each variable in said basic block; and ".
In Column 9, Claim 11, Line 40, prior to "statement", insert --a--.
In Column 11, Claim 22, Line 9, after "for", delete ",".
In Column 14, Claim 33, Line 5, replace ";" with --:--.

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